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THE ROPEWALK AT THE CHARLESTOWN NAVY YARD: A HISTORY AND REUSE PLAN

While the enhanced strength of the twisted thong or fibre has been recognized since the earliest eras of human activity, its tenacity was not sufficient to secure Samson after "Delilah therefore took new ropes, and bound him therewith... And he brake them from off his arms like a thread." (Judges 16:12)

Paleolithic implements suggest knowledge of twisting strips from hides and vines. Neolithic man's ability to move and lift heavy building materials would not have been possible without the development of stronger plaited rope structures.

Ropes of great strength were used in the age of the Pyramids in Egypt, beginning in about the 4th Dynasty (3,500 BC). Herodotus (Book VII, 34 & 37) described the use of cables in the invasion of Greece by Xerxes in 480 BC, and by 200 BC Mediterranean ships were rigged with rope made from hemp grown in the Rhine Valley. During the Han period in China (206 BC - 211 AD), ropes of silk filaments were used to convey the emperor's funeral carriage.

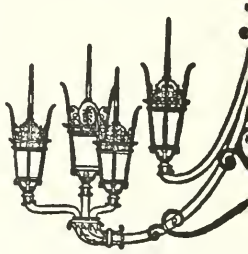
The basic principle of ropemaking - the reverse twisting of fibres, thongs or strands - has remained unchanged since its paleolithic beginning. The process of its production began as a hand craft and remained so until its mechanization during the 19th century. Pictures from Egyptial tombs (c. 1500 BC) show men walking while making rope. Ropemaking in India was a specialized trade by the 4th century BC.

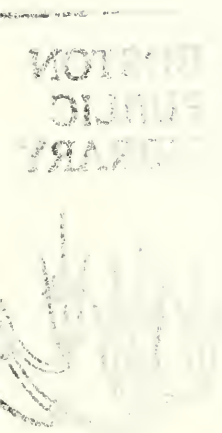
From the end of the first century AD until the 19th century, hemp remained the principal cordage material. With the opening of Philippine trade in 1830, American ropemakers found abaca fibre (Manila) stronger and more suited to marine work than hemp. The preference for Manila continued until the introduction of synthetic fibres in the 1950s.

The poetic practicality of the unique building that evolved to accommodate the age-old craft of ropemaking has been romanticized by Henry Wadsworth Longfellow in his lyric "The Ropewalk." Following are 4 of the 11 verses:

In that building, long and low,
With its windows all a-row,
Like the port-holes of a hulk,
Human spiders spin and spin,
Backward down their threads so thin
Dropping, each a hempen bulk.

At the end, an open door;
Squares of sunshine on the floor
Light the long and dusky lane;
And the whirring of a wheel,
Dull and drowsy, makes me feel
All its spokes are in my brain.





As the spinners to the end
Downward go and reascend,
 Gleam the long threads in the sun;
While within this brain of mine
Cobwebs brighter and more fine
 By the busy wheel are spun.

All these scenes do I behold,
These, and many left untold,
 In that building long and low;
While the wheel goes round and round,
With a drowsy, dreamy sound,
 And the spinners backward go.

After the blending and combing or hackling of the fibres into "roping" or "sliver," ropemaking is basically a series of three twisting operations. The sliver is twisted (usually from left to right) to "spin" the yarn. Several yarns are then twisted from right to left to "form" the strand. Three or more strands again are twisted from left to right to "lay" the rope. Occasionally three ropes may be twisted into a cable, always in an opposing direction, which provides stability. These operations occur whether the rope is made by hand or by machine.

Ropewalks came into being due to the necessity of stretching the rope out for its full length during the twisting processes. The ropemaker literally "walked" the rope, twisting it as he moved backward down the length of the course.

Up until the 18th century most ropemaking took place out-of-doors, along a road or in an open, fairly level field, as was the case in Boston's early ropewalks.

Prior to John Harrison's arrival from England in about 1641, Boston depended on the mother country to fill its cordage requirements. Harrison was apparently granted an exclusive right to make ropes by the town for a specified period of time, and probably the use of some land as well. In 1664, Harrison's walk measured 10'-10" in width, and in 1666 he acquired from Richard Gridley, brickmaker, "all that their tract of land for a Ropefield & other Vses) conteyning in length...nine hundred Eighty & fower foote..."[1]

Harrison's monopoly was temporarily threatened in 1662 when John Hayman, ropemaker, was permitted to use the street from "Goodman Read towerdes the watter side for to accomidate his trade,"[2] but that same year Hayman's production was limited to fishing line. He was soon ordered to "take up those posts,"[3] which he did, moving to Charlestown with his three slaves and a white servant in 1663, in order to continue his trade.

Charlestown was well established in ropemaking by the time Harrison had arrived in Boston, for in 1638 Mary Nash and John Penticost signed an agreement regarding a parcel of land bounded "south upon the Lane or highway called Rope-makers lane."[4]

By 1674 Harrison had a work house on his property,[5] and four years later he conveyed to his son, John, Jr., a new house abutting the ropefield "neer unto the Tar-house."[6] In 1685 James Barton acquired 1/3 interest in the 984' ropefield which included a rope house and warehouse.[7]

Eventually there were seven ropewalks in the pasture between what are now Pearl and Congress Streets, southeast of Milk Street.

In 1707 William Tilley, ropemaker, was permitted to erect three wood work houses 20' x 15' x 12' stud on one of the ropewalks,[8] and the following year he added a wooden "Shedd of 100 fathoms long 11 foot wide & 16 studd," obviously a two-story ropewalk.[9] Also in 1708, Edward Gray (father of Harrison Gray, treasurer of the Province, and great grandfather of Harrison Gray Otis) was allowed to continue making "use of the Highway nigh Lt. Holmes to make ropes."[10] Gray was granted a permit in 1712 to build a range of wood sheds 10' wide by 4' stud by 400' "on a piece of Land which he lately purchased for a Ropewalk."[11]

By 1722, when John Bonner issued the first detailed map of Boston, James Barton had relocated to Barton's Point on the south-western edge of the Mill Pond. Four years later the lands of goldsmith Knight Leverett were subdivided into fifteen parcels, with streets laid out across the ropewalk, shown on a plan, dated July 25, 1726, to be about 530' long, with two one-story buildings, one of which was 330 feet.[12] Bonner's map also located ropewalks along what became Allen Street in West Boston and along Belknap (Joy) Street near Cambridge Street.

The Boston Directory for 1789 listed fifteen ropemakers, including five in the Milk/Pearl Street area. By 1796, the number of Boston ropemakers listed had grown to 45, with none located in Milk Street, since at about 5AM on July 30, 1794, a fire broke out "at Mr. Hows RopeWalk near Milk Street, which consumed all the other Ropewalks in that quarter, together with about 36 Dwelling Houses.. outbuildings & stores containing large quantities of Hemp Cordage."[13] On September first, the town voted to grant six of the owners of the burned-out walks (Isaac Davis, Jeffry Richardson, Samuel Emmons, William and Archibald McNiel, John and Richard Codman, and Edward Howe) lots 50' wide on a piece of marsh land at the bottom of the Common, with stipulations as to dimensions and materials, which some of the recipients chose to ignore. The seventh owner, John Gray, relocated to Charlestown, where he joined forces with Joseph Burton.

The northern edge of Charles Bulfinch's unrealized sub-division plan for the south slope of Beacon Hill is identified as "ropewalks," approximately along Pinckney Street near Louisburg Square.[14]

Ten ropewalks were identified in the 1798 U. S. Direct Tax as assessed on Boston. In addition to five walks on the western edge of the Common (varying in width from 18' to 50' and in length from 600' to 1,200'), Jonathan and Benjamin Austin, George and Peter Cade, and Joseph Carnes had adjoining walks running westerly from George (Hancock) across Belknap (Joy) near Myrtle Street, Tyler and Caswell's 25,000 ft² walk with an 18' x 16' tar house and 40' x 16' hemp house paralleled Wiltshire (Chambers) Street, and William Brazier's 2,370 ft², one-story wood walk fronted on Pleasant Street.[15]

By 1805, the Austin, Cade and Carnes walks were sold for house lots and north and south segments of Joy Street connected.

The ropemakers who moved to the Common from Milk Street continued to be plagued by fire, first in 1806 and again in 1819, rebuilding each time. Mayor Josiah Quincy eventually bought them out in 1824 for $55,000, as part of his campaign for a more orderly city, and they dispersed to the Mill Dam and the Neck.

Charlestown was home to a number of ropewalks from before 1638 until the mid-19th century. John Hayman, who removed there from Boston in 1663, conveyed "ropeyards etc" 42' x 198' to his son-in-law, James Elson, in 1671,[16] and to his son, Nathan, in 1683-4, the latter

being adjacent to the former and bounded on the north by the Training Field.[17] Joseph Burton purchased a "lot for a ropewalk" from Thomas Brooks in 1794[18] which he sold as a "Ropewalk & house lot" to R. G. Amory in 1796.[19] By 1798, Archibald McNiel had moved his ropemaking from Boston Common to Charlestown, when he mortgaged a "house, ropewalks & 20 acres Lynde's Pt." to Samuel Brown, a Boston merchant.

The most illustrious ropewalk owner in the Boston area (albeit for a short interval) was Nathaniel Gorham, Esquire (1738-1796), of Charlestown, who was president of the Contiental Congress in 1786 and a signer of the Constitution from Massachusetts.[20] On May 24, 1796, Gorham purchased a ropewalk with a 3-story, 60' x 36' head and a 612' x 22' walk, from Caleb Swan, only to die of apoplexy on June 11th of that same year.[21] The property was inherited by his sons John and Stephen in 1799, who conveyed it to Benjamin Adams, a ropemaker, in 1818, by which time it had a 26' x 70' tar house, six feet northeast of the walk.[22]

Two ropewalks in addition to Gorham's appear on Peter Tufts' 1818 "Plan of Charlestown Peninsula." A walk at the pre-1638 location near the Charles River, about 200' southeast of the state prison, was still in operation. The third location abutted the Mystic River immediately northwest of Ebenezer Breed's pasture and about 400' from the Navy Yard.[23] It was operated by Joseph Andrews in 1801.

The 1840 plan of the Navy Yard prepared under the direction of Alexander Parris, locates Gorham's headhouse as jutting out slightly into the Salem Turnpike (now Chelsea Street) near the southwestern end of the Navy's ropewalk. A map of the Boston area published by Chapman and Hall of London in 1842, shows the Gorham walk as the only survivor of the three. It was still in place in 1852, when it appeared on a panorama of Charlestown engraved for Drake's History of Boston.

The rest of New England was well populated with ropewalks wherever sailing ships were built or outfitted. As early as 1748, Captain John Crocker laid out a ropewalk near the frog pond in Newburyport.[24] The ship building operation founded by Ezra Weston in Duxbury in 1764 included a 1,100-foot, one-story walk in three sections with two 2-story headhouses.[25] The Plymouth Cordage Company walk, built of wood in 1824, reached a length of 1,050 feet. It remained in use until 1947, when about $\frac{1}{2}$ of its length, including the 2-story headhouse. was taken down and reassembled at Mystic Seaport, complete with machinery.

While the idea of a ropewalk at the Charlestown Navy Yard was first promoted by Commodore William Bainbridge soon after his appointment as Commandant in 1812, it was not until the autumn of 1831 that his successor, Commandant Morris, was requested by the Navy Department to gather information about ropewalks and their machinery in preparation for an appropriation request to Congress. As part of his research, Morris contacted Horace Gray's ropewalk on the Mill Dam regarding spinning machines patented by Daniel Treadwell. For the navy's annual requirement of 1,000 tons of cordage, Treadwell recommended a 20-horsepower steam engine, 100 spinning machines, and 12 large and 8 small roving machines, with clear space 120' x 35' required for the roving frames and 240' x 35' for the spinning operations.[26]

Congressional legislation enacted in 1827, directing President John Quincy Adams "to cause the Navy Yards of the United States to be thoroughly examined and plans to be prepared...for the improvement of the same...", resulted in an August 11, 1828 "Plan of the Navy Yard at Charlestown, Mass., Showing the positions and dimensions of the Ground Plans of the different Buildings, Docks and other Improvement

as recommended by the Board of Commissioners..." The plan, probably drawn by Alexander Parris (1780-1852) in consultation with Col. Loammi Baldwin (1780-1838), included a ropewalk in the same configuration and location as it was eventually built.

Following his approval of Treadwell's machine in October 1831, Commodore Morris ordered Parris to prepare plans and estimates for several alternatives for a ropewalk, tar house and hemp house. "Plan A" called for a 3-story headhouse 70' x 60', plus two connecting structures: three stories, 360' x 44', and one story, 940' x 44'. "Plan B" consisted of a similar headhouse with a connecting 700-foot rope and spinning walk. "Plan C" was based on the 1828 master plan with changes recommended by area ropemakers: a 3-story headhouse and 1,300-foot walk, sufficient to manufacture 210-fathom cables. Estimates were submitted in granite and in brick.[7]

It was December of 1833 before Congress finally appropriated $50,000 to begin construction. On March 28, 1834, President Andrew Jackson approved "Plan C" with the following statement:

> In Plan C embracing the Site of the Walk and some of the contiguous proposed improvements, you will perceive that the proposed dimensions vary from those originally designated on the plan of the Yard... This variation has been made after a careful examination of private walks, & by the advice of their Superintendents - One head house only is required only for the machinery. The Rope Walk requires a clear breadth of 40 feet besides the supporting posts in the centre of one foot each. The patent spinning requires a clear breadth of 39 feet & the space for hand spinning is only sufficient to supplying the laying walk below. The length of the walk is also extended to 1300 feet. That length being represented as necessary to make cables of 120 fathoms whether in the common or patent mode. The position of the Tarring House is also changed. As the changes do not injure any other of the proposed improvements, nor require the change of any other object it would seem to be justifiable, particualrly as the original dimensions were specified without any particular reference to practical Rope Makers.
>
> The changes proposed above are approved by me.
>
> March 28, 1834
> Washington City Signed Andrew Jackson

After consultation with Alexander Parris and Master Mason Job Turner, it was decided that the walls were to be two feet thick and exhibit a granite exterior with backing of very hard burnt brick. The following advertisement appeared in The Boston Commercial Gazette for April 7, 1834:

NAVY AGENT'S OFFICE
Boston, April 4, 1834.

PROPOSALS will be received at this Office until the 1st of May next for furnishing at the Navy Yard, Charlestown, Mass. materials of the following dimensions and descriptions, viz.

1864 cubic yards of Stone, suitable for a foundation wall of 2 ft. 8 in.

28,700 superficial feet of hammered Quincy Granite, not less than one fifth of the whole quantity to be *headers* and *binders*, and no stone to be less than 8 inches thick, to be dressed to a plan, and in quality of workmanship to be equal to a pattern stone which will be shown on application to the Commandant of the aforesaid Navy Yard.

960,000 good hard Bricks.

272 Window Sills 8ft. 8 inches long, 6 inches thick 2 ft. 2 inches wide.

28,700 feet of rough hewn Stone with the beds, builds and end, hammered to make close joints, the face of the Stone not to be dressed more than the western wall built last season, the same proportion, one fifth to be headers and binders.

28,000 cubic ft. of rubble stone for backing up the walls.

The delivery of all the above articles to commence on the 1st day of May, and to be completed by the 1st day of November next. The stone to be delivered on such wharf in the Navy Yard as the Commandant may direct, and the Brick to be delivered and piled on the ground at the site of the contemplated rope walk. The whole to be delivered to the entire satisfaction, and subject to such inspection as the Commandant of the Navy Yard, Charlestown, aforesaid, may appoint.

For all further information apply at the office of the Commandant of the Yard.

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On May 13th, Commandant Jesse Elliot appointed Alexander Parris superintendent to oversee construction of the Ropewalk, and by August 16th the successful contractors were announced: Torrey, Colburn and Evans for stone; Edwards, Fitch and Cutler for brick; Charles Hollis for window sills; Josiah Rogers for timber; Josiah Wetherbee for cornice; Massachusetts State Prison for stone; James Borren for slate, with the stone to be quarried on Cape Ann.

Daniel Treadwell and his associates of Boston Cordage Manufactory recommended modifying the Master Plan in November, 1834, by siting the Hemp and Tar Houses nearer the Ropewalk and connecting the tar and walk cellars by an arched passage, through which would pass the belts to power the tarring machinery. It was the spring of 1835 before the plan was finalized, funds appropriated, and ground broken for a ropewalk with a 70-by-60-foot, 3-story and cellar headhouse, and a laying-up ground 1,300' x 45', 200 feet of which were to be two stories plus cellar. Also approved were a 200-by-19-foot, 2-story plus cellar Tarring House, and a 140-by-60-foot, 2-story Hemp House, also with cellar, capable of storing 1,200 tons of hemp.

Work was well under way by June of 1835. Foundations and cellar walk were complete, about 500 feet of the southwestern end had walls, with 300 feet of the roof framed and slated. The headhouse was raised to the cornice by September and the 200-foot, 2-story section of the walk ready for slating. The two massive chimneys were in place by early December. By late January, 1836, the headhouse and 2-story section were slated, but it was late June before the last of the wall granite was laid, at which time the masons were turning

the arches in the headhouse's boiler rooms and building a cistern at the northeast corner of the headhouse to supplement the water supply for the boilers.

Parris, Treadwell and the Boston Cordage Company personnel arrived at the following list of steam engines and machinery required to lay-up 1,000 tons of hemp annually: 2 steam engines of 30 and 15 horsepower, respectively, with boilers; 2 equalizing machines; 1 large and 1 small laying-up jack; 2 joiner travelling machines; 2 small worming machines; plus tubes, gauge plates, bobbins, reels, pulleys, and other equipment.[29]

It was late September of 1836 before the Navy Agent was authorized to contract for the engines and machines. In early March, 1837, contracts were awarded to Daniel Treadwell for spinning machinery, to J.M. Davis for rope-laying machinery, and to T. Ashcroft for the steam engines. Meanwhile it was decided to treat the floor sleepers and 2" white pine plank against decay by immersion in a solution of corrosive sublimate, a process patented in England in 1832 by John H. Kyan, called "Kyanizing."

By late May of 1837, the structure had been completed and a Mr. Carr, a machinist, was employed to oversee installation of driving wheels, gears, drums and all connecting machinery for spinning, tarring, and laying. On October 5th Secretary of the Navy Dickerson appointed Stephen Whitmore, Master Ropemaker, as the walk's first superintendent.

The Boston Evening Transcript for November 29, 1837, ran the following item:

> THE ROPEWALK AT THE NAVY YARD. We understand that the extensive and well constructed Ropewalk at the Navy Yard, Charlestown, went into operation yesterday, for the first time. This building does honor to the Government, and credit to the Commissioners of the Navy, under whose direction it was built. Mr Wetmore, of Salem, a highly intelligent mechanic, has been, by the recommendation of the Navy Commissioners, appointed Superintendent, to carry on the manufacture of Cordage for the use of the Navy. This is one step we are glad to see, toward permanent economy, and we most sincerely hope it will not be the last, when there are doubtless many opportunities for its exercise.

The engines were fired and the spinning of yarns began on December 16, 1837. One month later the spinning, tarring, and laying-up machinery on the "south ground" was reported to be operating smoothly and by mid-February, 1838, the "north ground" for cables and largest cordage was completed and all machinery installed. On May 5th, a circular letter advised all navy yard commandants that the facility was prepared to "furnish considerable quantities of rigging for the use of our vessels," and in mid-July the Ropewalk received its first order for "a gang of lower topmast rigging" for the sloop-of-war "Natchez" at the Pensacola Navy Yard.[30]

From the earliest conceptual stage for the Ropewalk to its completio Architect/Engineer Parris and Inventor Treadwell worked together closely on the planning and execution of what must be considered a collaborative effort. A descendent of Thomas Treadwell who settled in Ipswich in 1638, Daniel Treadwell (1791-1872), the son of Captain Jabez and Elizabeth (Dodge) Treadwell, was orphaned at 11 and apprenticed as a silversmith at 14, following which he studied medicine with Dr. John Ware. His first invention was a screw-making machine. In 1826 he patented a power printing press, first used for books but introduced into newspaper work by the Boston Daily Advertiser in 1829.

Concurrently Treadwell had been studying ropemaking and in 1828 completed a machine for spinning hemp. He devoted most of the next eight years to developing machines for ropemaking, securing four basic patents between 1831 and 1835. His machine, called "the Gypsey," attained world-wide use.

Treadwell was elected a fellow of the American Academy of Arts and Sciences in 1823, was co-editor of the Boston Journal of Philosophy and the Arts, 1823-26, and received an honorary degree from Harvard in 1829, where he served as Rumford Professor from 1834 to 1845. While at Harvard he devised a method for heating Gore Hall and supervised construction of the Richard Bond-designed building in 1837.[31]

The city of Boston retained his services in 1825 to make a survey for the introduction of water from distant sources.[32] From 1842 and into his lateryears he became preoccupied with improving the power and performance of canon, publishing his ideas in 1856 and 1864.[33]

Alexander Parris's association with the Navy Yard began in 1824 with the design of a 2,400-foot-long granite wall and ended, rather unceremoniously in 1844 when, according to a family history, "by the operation of some political revolutions in the Navy department he was dismissed from his public employment."[34] His last major assignment, authorized in 1838, was to execute record drawings of additions to the yard between 1830 and 1840, including the Ropewalk complex and related machinery. Accompanying the drawings was the following short description of the "Ropery," "tarring house" and "Hemp Store House," and the longer detailing of the process of manufactur and its machinery:

DESCRIPTION

Of the Buildings, Machinery etc. composing the Ropery, Erected in the Navy Yard Charlestown, Mass. btween the Years 1834 and 1838

By reference to the plan of the Navy Yard annexed to this book of drawings, the location of this Ropery will be perceived stretching along next the Salem turnpike, consisting of a Head House 70 by 60 feet three stories high with a basement, a Laying-up ground 1300 by 45 feet, 200 of which is two stories. In the basement story of the head house are placed two Steam Engines one of 30 and one of 15 horse power, so arranged as to work together by couplings when required for laying-up heavy cables etc. upon the shafts of these Engines are the main drums, from which the belts for carrying the machinery for Spinning, Laying-up, Tarring etc. The machinery for tarring is put in motion by a belt passing

through an arch under the passage between the spinning and Laying-up rooms. The tarring house is 200 feet by 19 with projections at the centre to give room for the stairs to the second story. A short distance North Easterly from the head house is the Hemp Store House 140 by 60 feet and 32 feet high divided into two high stories and will contain 1200 tons of hemp. A cellar under the whole also the tarring house is used for storing Tar Cordage, etc. The walls of said buildings are built in the most substantial manner faced with rough granite and are two feet thick, backed up with brick one fifth part of the granite ashler goes quite through and makes the whole thickness of the wall. All the doors and window shutters are wholly of wrought iron, the roofs of all the said buildings are covered with the best welsh slates. Over the boiler and engine rooms is a brick arched ceiling supported by cast iron beams. The preparing and spinning rooms have cast iron pipes 7 inches in diameter which are placed quite round the rooms, through which the steam passes in its exit from the engines, and heats the rooms sufficiently for the comfort of the workmen and the working of the machinery.

The Process of Manufacture

The Manufacture of Cordage consists essentially of three processes namely, spinning, tarring and laying or forcing the ropes. All these processes are performed in this Ropery by machinery driven by steam power. The spinning room is situated near the head of the walk, in the second story, it is 200 feet long and 41 feet wide, containing nine preparing machines and eighty spinning machines. The order of the operations for producing the yarns is as follows. The hemp, being previously hackled to the proper degree, if fine yarns are to be spun; is separated into small portions of about half a pound each and laid upon a board behind the machine called the Circular Hackling Machine, seen in the drawing No. 32 by this machine the fibres are drawn between the teeth of the large cylinder and round upon its circumference untill it is wound to a thickness nearly equal to the length of the teeth. The attendant then stops the machine, and breaking the ring or covering of hemp at the point where an open space is seen in the rows of teeth he strips it from the cylinder in a large roll or lap. each lap formed in this way contains about six pounds of hemp the fibres nearly parallel with each other, light and free from snarls, while the ends of the fibers are distributed over every part of the lap so that they can be drawn separately from the same. The next operation is performed by the belted roving machine or drawing frame seen in the drawing No. 33. this machine being put in motion, the end of a lap from the Circular hackle, is passed onto its points or gill pins and by them moved forward untill it meets the drawing belts, by which it is seized and drawn out to many times its original length. The laps being supplied to the machine without

interruption, a continuous roving is formed by the drawing belts and deposited into a large can. To obtain rovings of an even and uniform quality it is found useful to perform this operation twice, a number of the rovings therefore as first formed are passed together through a second machine formed precisely like the first except that it is of smaller size. The rovings delivered by this machine are taken in cans to the spinning machines One of which is seen in drawings No. 20 to 23. Here at each machine a roving is passed through a series of points or gill pins arranged upon a belt as in the roving machines but the drawing out the roving to the fineness required for the yarn is performed by rollers, from which it is immediately twisted and wound upon a bobbin as will be understood by an inspection of the drawings. One of the peculiarities of this machine is its self regulating apparatus by that the operation of which whenever the yarn is of a size larger than required, the supply of roving is interrupted, untill the yarn is reduced to the required size. Again if the yarn be given off by the rollers of a size less than that required, the same apparatus hastenes the advance of the roving untill the yarn attains its proper diameter. To keep the whole of this preparing and spinning Machinery in operation requires the attendance of sixteen men only, who produce 4000 pounds of yarn of ordinary fineness per day. the cost of this manufacture including steam power, repairs, and every expense has been shown by careful examination, made by order of the Board of Navy Commissioners, to be about one half of that required to spin in the ordinary way by hand, and the whole amount annually saved to the government by the opperation of the machinery, is shown in the same examination to be about $13,000. But a still more important result is obtained from the machinery in the quality of the cordage produced; which has been established by full experiment made in the ropery to be from 10 to 18 per cent stronger than cordage made from hemp of the same quality spun by hand; and what may seem incredible, more than 50 per cent stronger than the common hand spun cordage used upon merchant ships. The Second Operation namely the tarring the yarns is performed in a building by the side of the rope walk 196 by 15 feet inside dimensions. The drawings Nos. 16, 17, 18, 34, show the tarring machinery which may be considered as but one machine it will be seen that bobbins filled with yarn as taken from the spinning machines are placed upon a frame to the number of 160 the yarn is then drawn from them and passed a vat 40 feet long, filled with tar, which is kept at the proper temperature and state of preparation by steam pipes passing through it, during the passage of the yarn through the tar it is partially untwisted by the operation of a peculiar apparatus, in order that the tar may penetrate to the centre of the yarns. At the end of the tar vat, the yarns pass through the nipper where the superabundant tar is squeezed out. From this it passes over rollers through the length of the building during which it is cooled and it is then returned and wound upon large bobbins of which

there are 80 constantly in motion two yarns being wound upon each bobbin they are afterwards separated, in the upper room of the building by a machine, acting with great rapidity and each yarn is wound singly upon its bobbin as required for the laying up machinery.

The whole of this machinery for tarring requires the attendance of 3 men and is capable of tarring three tons of yarn per day with a degree of certainty and perfection wholly unattainable by the old methods of operating. The whole of the Machinery for preparing the hemp spinning and tarring as here represented and described, was invented by Mr. Daniel Treadwell of Boston, between the years 1828 and 1834. The first manufactury on this plan was constructed by him on the Mill dam near Boston, where the cordage for the Navy was for several years manufactured. The Machinery at the Navy Yard was constructed and put up by Mr. Treadwell under contract with the Navy Board in the years 1837 and 1838.

The Laying-up or forming the yarns thus spun and tarred into ropes may be divided into two operations, the first forming the strands, the second laying them into ropes.

First from three to five hundred bobbins containing a single yarn each are placed into a frame shewn in Drawing No. 36 in such a manner that every bobbin can revolve freely upon its centre the number of yarns required for a strand are then drawn forward to the register plate and passed through the concentric circles of holes which guide every yarn to its proper place as it enters and is drawn through the Tube- which is placed in front of the plate- a number of these tubes are placed in an iron box which is kept hot by steam when the yarns are being drawn through. the yarns are then hooked upon the hooks or spindles of the Strand forming machine Shewn in Drawing Nos. 25, 26 upon one side of this machine is an expanding drum round which one or more turns of the endless band is passed to give motion to the machinery, in the centre of the Machine is another expanding drum called the ground rope drum round this one or more turns of the ground rope is passed, by this the machine is moved progressively backwards, the wheels of the machine are flanched and run upon iron rails laid the whole length of the walk, when the endless band is set in motion, the machine travels backwards at a rate which is in proportion to the twist required for the strand, drawing the yarns through the tubes twisting and forming them into a solid even and uniform strand. The next operation is laying the strands into ropes this is perfomed upon two machines called equallizing machines the one at the head of the rope walk is stationary and is used for the foreturn or twisting the strands. The other travels upon the iron rails, and gives the after turn or twist in the rope. After the strands have received a sufficient quantity of twist they are all placed upon one hook or spindle of this machine. the laying up top is placed between them, and the machines

being set in motion and as the top moved forward the rope is laid; in the after part or under this machine is fixed a drag loaded with a weight sufficient to keep the rope at a proper tension, thus closing the process of laying.

Near the centre of the walk is a small rail road upon which the small machines shown in drawings No. for making ratting and all small siezing stuff is made.

The drawings (kept in the National Archives, Washington- micro copy 1023), numbered 3-34, 37-41 (with 35, 36 apparently missing) consist of only 7 drawings related to buildings with the remaining 30 detailing machinery.

The Parris-supervised drawing of the Ropewalk (no. 37), dated February 21, 1841, includes a partial southeast elevation plus a plan of the cellar. The elevation shows the 3-story, 5-bay headhouse as well as the 5-bay widened section of the walk and the 2-story, 15-bay walk plus 3 bays of the one-story walk. Elements shown that no longer survive or appear include tall granite chimneys at the junction of the headhouse and walk, single iron shutters on each window (only two survive), and the tops of basement windows, since bricked-in and covered by a concrete strip on the ground. The basement plan includes two boiler rooms, with four steam boilers in one and two in the other, flanking a central space housing drive shafts and "equalizing machines" in the headhouse, and an uninterrupted open space under the 2-story walk. The underground passage to the Tar House is also shown.

In March of 1839 the cast iron main drive shaft revealed weakness,[35] leading to its replacement with one of wrought iron. From that point on, the Ropewalk and its operating contents were subjected to innumerable minor and major modifications, additions, and replacement due to technological advances, variations in demand, etc. In fact, three of the Parris-supervised drawings, dated 1840, detail an "Improved Laying-up Machine." Also in 1840 the Ropewalk took steps to add rope from hide to its production, assisted by a hide-cutting machine, built and patented by employees Philip B. Holmes and William Pedrick.[36]

The Ropewalk structure has been subjected to two major permanent additions and a like number of unfortunate subtractions. A drawing, dated August 1857, shows the "proposed" addition of 55 bays to the second floor of the walk, at an estimated cost of $42,000. Three drawings from March to May 1865 further detail the 550-foot addition. The southwest end wall included a large lunette window at the attic level flanked by segmental-arched openings with double sash on the second level.[37] Three drawings from 1908-1909 illustrate a further addition to the second floor and two dated photographs document the construction of the eight view bays in 1910.[38] The end wall of the later addition was of frame construction with a single lunette. Other than the end wall (now covered with corrugated metal) and an enlarged opening in the last bay of the 1910 addition, the exterior surfaces of these two extensions are indistinguishable from the original building. Inside the only notable differences are splayed window reveals in the 1865 portion and thinner (16") masonry walls in the 1910 addition.

Major losses of original fabric include the granite chimneys, after a new boiler house was constructed in 1872, and a 30-foot segment of the southwestern end of the one-story walk, during

World War II. A 1921 photograph shows the last end as a pedimented elevation with two granite-framed openings.[39] Its replacement lacks the openings. Somewhat less damaging has been the enlargement of several window openings to accommodate single and double doors, numerous holes and other blemishes in the granite, plus the rearranging of partitions and openings in the headhouse interior.

Among the several intrusive additions over the years, only two remain: a 1918, 2-story, 63-foot-long brick enclosure for toilets and storage attached to the northwest wall of the walk, and a concrete loading dock with a wood superstructure dating from 1934, protruding from the northeast elevation of the headhouse. The loading dock and its enlarged window opening accompanied a new hoistway and elevator installed in the headhouse at the same time.[40]

During the early years of the Ropewalk, sanitary facilities were doubtless located elsewhere. In order to improve convenience, an undated drawing shows an ingenious scheme for attaching a 2-story privy to the side of the building with access through existing windows.[41] Hopkins' 1875 atlas shows a small addition at about bay 10 on the Chelsea Street side which may have been the privy.

1943 brought the Ropewalk's most disfiguring addition: a 2-story, 280-foot-long frame structure built over the southwestern 2/3 of the one-story walk, accompanied by a 3-story stair tower and a one-story ambulance garage, all of which remained in place until the late 1970s. A new slate roof with standard rafter construction restored the walk's outward appearance.

Parris's 1840s drawings show no visible above-ground connections between the Ropewalk and related buildings. A plan of a bridge to the Hemp House, dated April 18, 1856,[42] was an early example of what became, by the 20th century, a forest of visible connections: walkways, conveyers of various sorts, pipes and conduits, linking the Ropewalk and its headhouse with Hemp and Tar Houses, Wire Rope Mill and Power House. Although scars remain on the buildings, the only surviving connector is a second-story open wood and iron bridge between the Tar House and bay 12 of the Ropewalk.

The original ropemaking machinery, as well as its power source and distribution system, went through many changes, refinements and replacements over the years. Attached to the National Archives set of Parris supervised 1840 drawings, is a series of 112 drawings prepared by the "Office of Brown & Hastings, Boston," and dated from January to July 1849, showing a new engine, boilers, shafting, nine laying machines, two worming machines, reeling machines, a spinner and a spun yarn machine. Drawings for new block strapping, hemp breaking, draw, and braiding machines were prepared in 1862-64. In 1864 new steel shafting replaced wrought iron which, in turn, had replaced cast iron in 1839, Also in 1864 new boilers were designed with elegantly detailed iron fronts, only to be superseded in 1872 by eight new boilers located in a separate boiler house on the site of Building 96.[43]

In 1871 a wire rope mill was established in a separate building (79).[44] In 1899 electricity replaced steam power and new Watson cordage machinery was installed in the Ropewalk.[45] 1918 saw the end of wire rope production and the expansion of fibre rope making, with new machines installed in the Hemp House. The 1943 2-story addition to the Ropewalk signaled the encroachment of other uses on the ropemaking process. A proposal to raze the building in 1958 for a gas cylinder storage facility was fortunately rebuffed, but the Vietnam War's revival of ropemaking was temporary, and the Ropewalk closed on December 31, 1971.[46]

Four satellite buildings contributed to the ropemaking process: the Tar and Hemp Houses (60,62) from the beginning, and the Wire Rope Mill (79) and Power House (96) from later dates.

Both the Tar (or Tarring) House and the Hemp House were designed by Alexander Parris and relate in style and materials to the Ropewalk. Originally designed as one-story, the Tar House plan was enlarged to two stories plus cellar by Parris, assisted by Treadwell, in the spring of 1836. Located about 20' southeast of and parallel with the Ropewalk, the 200-by-19-foot structure of undressed granite backed by brick with a slate gable roof, was completed in the autumn of 1837. Projecting pedimented pavilions centered on its long sides accommodated entrances and staircases. A small one-story element shown on Parris's plan as attached to the northeast end, was removed after 1978. A 1921 plan (with revisions to 1959)[47] shows the southeastern wall minus its projecting pavilion, a situation which unfortunately still exists. Surviving is a one-story, hip-roofed granite addition to the southwest end, dating from before 1874. The Tar House ceased functioning as such in 1963.

The 140' x 60' Hemp Storage House, also a 2-story, quarry-faced granite (backed by brick) structure, but with a slate hip roof, was begun in the spring of 1837 and completed in December of the same year. It was set southeast of the headhouse at a 12-degree angle, parallel with most other Navy Yard buildings, and served its original use into the 1890s. Several drawings labeled "Wire Rope Mill" and dated February 4, 1910,[48] illustrate a 59' x 150' 2-story addition to the southwestern end, parallel with the Tar House. The addition was constructed of red brick with granite trim, and a gabled roof with large copper monitor and a lunette window in the southwest pedimented gable. The Hemp House served a variety of uses until the yard was closed in 1973, including off-and-on hemp storage and ropemaking. A second-story covered walkway projecting from the northeast elevation on a 1977 photograph has been removed.

Building 79, facing the northeast headhouse facade, is a 2-story, gable-roofed structure of red brick with granite trim. It was constructed in 1852 as a coal shed for the Ropewalk, from plans drawn by the Navy Yard's Civil Engineering Department.[49] By 1859 it was doubled in size, and in 1872 converted into the Navy Yard's first Wire Rope Mill, according to drawings dating from 1870.[50] Wire rope making in the building ceased in 1918 and from then on it served primarily as a storehouse.

Standing immediately southeast of Building 79 is the former Power House for the Ropewalk, Building 96, a one-story, red brick structure with a hip roof and monitor. It was preceded on the site by the Boiler House for the Ropewalk, Building 52, proposed in 1871 and built in 1872.[51] Its reconstruction and enlargement in 1898-99 came in response to the change from steam to electricity as the power source for the Ropewalk's machinery. By 1910 it had ceased functioning as a power house and, typically, became a storehouse. Its exterior has been subject to relatively minor changes.

Through most of its history, the Ropewalk was bordered by a protective wall on the northwest and an inviting walk on the southeast. On December 12, 1816, Commandant Isaac Hull first forwarded a plan to the Navy Department proposing a wall for "safe keeping and preservation of the public property," to replace existing wooden fencing. After an aborted attempt in 1821, a 600' wall from Water Street to the Salem Turnpike (Chelsea Street) was begun late in 1823 and completed about a year later.[52]

In the spring of 1824 Alexander Parris, who had recently completed similar walls around the Charlestown Prison, prepared a plan to continue the wall for 2,400' along the Turnpike. The wall was to be of granite, 9' high and 20" thick, set on a foundation of "large stone" 3' deep from the surface and 3' thick. None of the stretchers were to be less than 2' long and the capping stones not less than 4'. Funds were approved by Congress in March 1825, and by August the first 200' had been laid by low bidders Levi Bates and William Wood.

Plans and estimates by Parris for iron gates and railing were approved in April 1825, with fabricating and installation accomplished by contractors A. Woodworth and John Cutter in 1826. By October of that year the wall with its embellishments was substantially complete.[53] Initially all of the gates along what is now Chelsea Street were associated with the Commandant's Quarters and adjacent Marine Barracks. The 1892 and 1911 Bromley atlases show a break in the wall at the southwest end of the Ropewalk (Gate 4) and the 1911 atlas included a break at the northeastern end of the Wire Rope Mill (Gate 5).

In 1929 all of the wall from Gate 4 to the northeastern end of the Yard was taken down and replaced by an iron fence with concrete posts, which survives in shabby condition.[54]

Several engravings appeared in Gleason's Pictorial Drawing Room Companion during the 1850s picturing the Navy Yard as a verdant oasis rather than a hard-surfaced industrial desert. Nineteenth-century photographs of the Ropewalk tend to verify its park-like setting. Paralleling the southeast side of the elongated building was a narrow boardwalk, bordered on both sides by trees and lit by periodic gaslights. Known as "Flirtation Walk" (or Alley), it became a popular promenade. According to Rear-Admiral George Henry Preble's 1881 account: "There are two avenues running lengthwise of the yard, ornamented with shade-trees; and 'Flirtation Alley,' along the inner side of the ropewalk, with its shady trees and plank-walk, is a well-known resort of lovers on moonlight nights..."[55] The origin of the walk is obscure, but in an 1852 view from Gleason's Pictorial, arm-in-arm strollers can be seen alongside the Ropewalk.[56] Three undated 19th-century photos clearly show the wooden walk, slightly raised above the grass. In two of the views the walk abuts the southeasterly row of trees, while in the third it is centered between the rows, indicating a shift in position at some point. The walk appears in deteriorated condition in a photo from about 1903, but by 1910 it appears in good repair. By 1921, Flirtation Walk had been replaced by pavement at grade.

Although the Ropewalk, Hemp House and Tar House were relatively unadorned structures befitting their government-sponsored industrial use, they were not, in this regard, unlike typical commercial and civic buildings erected in Boston at the time. The Ropewalk's restrained detail consisting of hammered quoins, a slightly-projecting pedimented central pavilion and pedimented portal, recurred frequently. Its Greek Revival style, granite building blocks and relatively flat facades were typical of Boston area buildings from the 1820s through the 1840s. What distinguished the Navy Yard buildings from most civilian examples was their free-standing aspect. Solomon Willard's 1835 Suffolk County Courthouse and Ammi B. Young's Custom House of 1837-47 were rare examples in Boston of this detachment. Both had monumental Doric porticos but their basic granite wall surfaces were relatively free of detail.

Bowen's Boston Newsletter and City Record of August 12, 1826, referred to the formation of the "Boston Style of Building," seen principally in the work of Solomon Willard, Alexander Parris and Isaiah Rogers, all of whom seemed enamored of Greek forms expressed in granite. Rogers' 1827 Tremont Theater and his Tremont House of 1828, which faced each other across the street, were good examples of this restrained monumentality.

The increased availability of granite, especially resulting from the inauguration in 1826 of Gridley Bryant's horse-drawn, 4-mile railway from the Quincy quarry to the water, coincided with a period of sustained growth in Boston during the 1820s and 1830s, causing granite buildings to proliferate in the predominantly red brick city. An agreement among granite quarry operators, masons, contractors and architects (including Parris and Bryant) caused a booklet entitled, "Rules for Measuring Hammered Granite Stone," to be published in 1829.[37] Included was a uniform system of measurement for thirty-two standard cuts of stone. This standardization helped to promote the simplified granite facade. Typical products were the ranges of stores and warehouses from Isaiah Rogers' Commercial Wharf of 1832 to the Old South Block on Milk Street of 1845 (demolished)

While only a scattering of granite era buildings remain in downtown Boston, all three of the Navy Yard's ropemaking structures survive relatively intact. Since the Ropewalk and its companions are among Boston's most architecturally and historically significant structures, it is essential that preservation considerations be nothing short of hard line. Exterior granite walls must be subjected only to sensitive repair, with restoration in kind of missing elements (such as those currently replaced with brick concrete or cinder block). Obtrusive wires, conduit, fixtures, etc. should be removed from the exterior, but interesting industrial artifacts should be retained. All bricked-in windows should be reopened and re-sashed in kind, including the windows and hatchways in the cellar. Lightwells should be dug (masonry walls may still exist) and covered with grates. Salvageable sash and frames must be retained, repaired, and reglazed only where glass is broken or missing. Historic doors should be repaired if possible. The two surviving iron shutters must be retained in place, as must all shutter hinges and other surviving hardware. Ventilation cupolas must be retained and repaired, as should skylights. Broken and missing slates must be individually replaced in kind. General cleaning of exterior masonry is neither necessary nor desirable, although selective removal of tar, paint, graffiti and serious stains may be accomplished if the masonry is not eroded or bleached in the process. The granite does not appear to need general pointing. The pointing of replacement stone must match existing mix, color and joint profile. The Secretary of the Interior's Standards for Rehabilitation must be scrupulously adhered to.

New additions must not be permitted, and the 2-story brick addition to the northwest elevation of the walk should be removed, as should the loading dock attached to the northeast facade of the headhouse, with granite and windows restored. Since ingress and egress are particular problems in a building of the Ropewalk's length, the conversion of one additional first floor window into a door should be permitted, but only in exchange for returning one double door to its original window/wall configuration. The other

two similar double doors now existing may be kept provided the openings are repaired with granite. The cellar entrance on the northwest elevation of the headhouse should be reopened and restored. All fire escapes should be relocated to the northwest elevation.

As much of the historic interior fabric should be retained and exposed as is compatible with the new uses of the space. Masonry walls should remain visible, as should posts, beams and joists where possible. Drive shafts, pulleys, gears, motors and other industrial artifacts, including the turntables, must be retained and displayed (in place where possible) as fascinating reminders of the buildings original use. Extraneous and intrusive lally columns, pipes and other incompatible additions should be removed. The hoistway and elevator in the headhouse should be replaced with new elevators as required, installed away from windows and doors. Consideration should be given to retaining the existing oil tank, currently inaccessible on the first floor of the headhouse. The original cellar boiler rooms, now filled with rubble, should be re-excavated and made accessible. All ropemaking machinery (a forming machine, foreturn and afterturn machines, laying truck) plus ranks of creels with bobbins, register plates, stakeheads, laying tops, fathom signs, scale, tanks, work benches, etc., should be retained and integrated into a ropemaking exhibit. The intent is to respect the integrity of the structure and its original use.

The missing central pavilion of the Tar House must be reconstructed according to its original design, and the cellar-level tunnel connecting it with the Ropewalk reopened and excavated to a depth sufficient for human passage. The second-level bridge connecting the two must also be retained, and repaired if necessary.

The southeast side of the Ropewalk must be kept free of encroaching structures. It would be desirable to reintroduce a wider version of Flirtation Walk with its flanking rows of trees as originally laid out. The walk would serve the entrances to the building, in addition to being a promenade.

It is essential that a building as architecturally unique and historically significant as the Ropewalk be available and accessible to the citizenry at large. Its future use, as herein proposed, will be in the form of a trio of historical museums: a National Park Service Ropemaking Museum; a Society for the Preservation of New England Antiquities Archive, Collection Resource Center and Conservation Center; and a City of Boston Maritime Museum.

The headhouse and adjacent segment of the walk will include ropemaking machines and equipment set up as they were during the latter days of the Ropewalk's operation, in addition to interpretive and related material. The Ropemaking Museum will occupy about 42,005 ft^2 of interior space out of a total of 136,210 ft^2 (inclusive of attic and cellar) in the Ropewalk.

Three currently far-flung aspects of SPNEA's operations (including collections which have remained inaccessible to the public for decades) will be consolidated in the Ropewalk and adjacent Tar House. These include:

(1) The Archives, established in 1910 to collect and preserve photographs, prints, architectural drawings, maps, advertising matter, manuscripts, books and other publications that document New England's streets, buildings and culture.

(2) A Collections Resource Center, including and displaying the following significant collections of architectural fragments, furnishings and other objects and artifacts not currently displayed in the Society's 23 house museums and 11 study houses: (a) architectural elements (doors, windows, columns, staircases, paneling, iron & masonry) c. 1650-1870; (b) ceramics (Chinese export porcelain; English, American and European pottery and porcelain) c. 1740-1920; (c) fireplace equipment c. 1700-1850; (d) furniture c. 1675-1850; (e) glass (blown, cut, molded, pressed) c. 1700-1920; (f) kitchen equipment c. 1725-1875; (g) lighting equipment c. 1730-1900; (h) paintings and prints c. 1740-1880; (i) pewter c. 1730-1870; (j) spinning and weaving equipment c. 1750-1900; (k) textiles and costumes c. 17th century-1900; (l) tools and farming equipment; (m) toys and dolls c. 1870-1920; (n) wallpaper c. 1730-1900; plus other less definitive collections: communication devices, currency, equestrian equipment, fire fighting equipment, horse-drawn vehicles, Indian artifacts, maritime material, military equipment, political memorabilia, scientific instruments, Shaker material, silver and stamps.

(3) A Conservation Center, offering services in three categories to public agencies, non-profit organizations, businesses, homeowners, architects and engineers: (a) Consulting Services, general and technical advice and research for preservation and restoration of historic structures; (b) Architectural Conservation Services, specializing in preservation and restoration of historic building fabric; (c) Furniture Conservation Lab, repairs, turning and carving, veneer work, gilding, upholstery, special finishes.

The Archives, requiring space for a reading room, stacks and vertical and horizontal files, storage, offices, etc., covering about 7,840 ft^2, will be located near the center of the ground floor of the Ropewalk. The Collections Resource Center will be divided into study storage galleries, an architectural fragment storage/display area, a formal display gallery, dead storage, offices, etc., and will be located in about 36,575 ft^2 of floor area at the southwestern ends of the walk's first, second and attic floors. The Conservation Center will be located in the Tar House (three levels) and in the cellar of the Ropewalk, connected by the existing tunnel. Accommodated will be analytical and conservation labs, storage and offices in about 19,205 ft^2 of floor area. Total SPNEA space, including circulation, will be about 65,330 square feet.

Unlike SPNEA, which is almost overburdened with collections, the new Boston Maritime Museum would begin with none. While it is likely that a limited number of artifacts and art objects could be obtained on loan from institutions, individuals and other sources, the building of a significant collection would require generous amounts of both time and money. Therefore, the museum will have to rely primarily on visual displays, at least in the beginning.

A survey of ten New England Maritime Museums, plus South Street Seaport in New York, revealed both variations and similarities in collections and approaches to display. Excluding South Street Seaport with its substantial commercial component, the museums ranged in size and complexity from Mystic Seaport's entire community with a ropewalk, several large vessels and dozens of elaborate, separately-housed exhibits, to the small but very select collection of paintings, maps and artifacts on display at the Bostonian Society.

Other museums visited include Peabody Museum of Salem (Asian export art, maritime paintings and artifacts, collections of archaeology, ethnology, natural history, and exhibits on a variety of nautical themes); New Bedford Whaling Museum (models, paintings, scrimshaw, artifacts relating to whaling, "New Bedford Emerges 1787-1815" exhibit); Essex Shipbuilding Museum (small collection of paintings, models, artifacts related to its theme); Custom House maritime Museum, Newburyport (models, paintings, artifacts, memorabilia, photo displays re Newburyport); Maine Maritime Museum, Bath (outdoor, riverside, former shipyard site with several buildings displaying shipbuilding crafts, plus the historic Sewall House in town with paintings, artifacts, models etc. re Bath's shipbuilders); Kendall Whaling Museum, Sharon (personal collection of whaling art, models and memorabilia); Hart Nautical Galleries, MIT (changing exhibits with plans, models, etc., technical emphasis); Constitution Museum, Boston (displays and mock-ups related to a single ship and its associations). In addition to collections and displays, Mystic and New Bedford have theaters; Essex, Bath, Newburyport, Constitution have video presentations; Mystic, Peabody, New Bedford, Maine, Kendall, Bostonian Society have libraries and/or archives.

These museums suggest that most coastal towns and cities in New England have a particular maritime specialty: New Bedford, whaling; Bath, shipbuilding; Salem, China Trade, etc. Boston, on the other hand, participated extensively in virtually every aspect of maritime activity, in addition to having been literally transformed from a scruffy spit of land into an urban metropolis by drawing its commercial life from the sea and extending its land mass into that sea. Therefore, it is appropriate that a museum representing and celebrating Boston's dependence on and mastery of the sea, deal not only with maritime activity, but also with the effects of that activity on the physical expansion, development and evolution of the city.

The locus will be the Boston Inner Harbor from which development expanded landward and maritime activity seaward. Integral to the maritime history and resulting urban development of Boston are four settlements beyond the Shawmut Peninsula: (1) East Boston, called Noddle's Island after its first settler, William Noddle, before 1630; granted to Samuel Maverick in 1633; its 663 acres plus extensive flats became part of Boston in 1636-7; prior to its urbanization, it was purchased by the newly incorporated East Boston Company in 1833. (2) South Boston, a rural peninsula (also with spacious flats), called Dorchester Neck until its annexation to Boston in 1804, with its development beginning in 1809 according to a Division Deed among Boston merchants Gardiner Greene, Jonathan Mason, William Tudor, Joseph Woodward, John Winslow et al.[58] (3) Chelsea, part of Boston until May 1738, when "all the lands within the Town of Boston, heretofore called Winnisimet, Rumney Marsh, and Pullen Point...[were] erected into a township of the name of Chelsea."[59] (4) Medford, a major ship building center from 1631, when Governor Winthrop launched his 30-ton bark, "The Blessing of the Bay," until the 1870s.

The Boston Maritime Museum's interests will range from broad development patterns to particular events and personalities, industries and trades, ships and merchants, wharves and businesses. Of particular interest will be the evolution of the harbor, extension of the shoreline, filling of coves and flats with their resulting topographical changes inland, changes in wharf development, street pattern and architectural evolution as influenced by maritime

expansion, and on-shore development financed by traders. The histories of particular waterfront elements will be considered, including 17th century Bendall's and Oliver's Docks and Charlestown Town Dock and dry dock, 18th century Long Wharf, 19th century Tudor's Wharf with its phenomenal ice trade, and the Hoosac Docks in Charlestown which accounted for one-half of Boston's foreign trade from the early 1880s to 1905, as well as bridges, tunnels and ferries, also military uses and activities, including North and South Batteries, Fort Hill, the Navy Yard, Naval vessels and heroes.

Shipbuilding, shipbuilders and notable ships will figure prominently. Examples are Nehemiah Bourne's shipyard where the first Boston-built ship, "Trial," of 160 tons, was launched in 1641; Benjamin Hallowell's shipyard at the foot of Milk Street, builder of the "Prince of Orange" in 1740, the 24-gun, 561-ton frigate "Boston" in 1747-48, and the schooner "Sultana" in 1766-67; Thatcher Magoun of Medford, who laid his first keel in 1802, built privateers (including "Avon") during the War of 1812, and, in 1822, built "Amethyst," "Emerald" and other ships for the newly-formed Boston and Liverpool Packet Company; the legendary Donald McKay of East Boston, whose clipper ships "Stag Hound," "Sovereign of the Seas," "Flying Cloud" et al, were world famous; Samuel Hartt Pook, naval architect, designer of clippers and steam ships; Atlantic Iron Works of East Boston, incorporated in 1853, which built, repaired, supplied with machinery, many iron steam ships including Admiral Farragut's Flagship, the steam frigate "Franklin."

Ship owners, investors and merchant traders are particularly interesting in that many of them were socially prominent, politically involved, and influential in real estate development ashore. Well-known names like Andrew and Jonathan Belcher, Daniel Oliver and Andrew Faneuil were leading investors in ships in the late 17th century, while an obscure figure, Samuel Lillie, had become, by 1707, the largest shipowner in the western hemisphere, only to plummet into bankruptcy that same year. The 19th century brought great fortunes to China traders like Robert Bennett Forbes, James and Thomas Handasyd Perkins and many others, while James and Thomas Lamb made theirs in Northwest trade, and Roxbury native William F. Weld became the largest ship owner in America before turning his interest to building railroads, not least of which was the Boston and Maine in 1844. That same year Enoch Train established Train and Company, Boston to Liverpool packets, with ships by Donald McKay. In 1855, The Boston and European Steamship Company was formed by Train, McKay and others, who had bought Constitution Wharf in 1852.

Captain Cyprian Southack, master of the brigantine "William and Mary," was unsuccessful in apprehending a certain French privateer in 1691, but he became a noted chart maker, publishing a chart of Boston harbor in 1694 and New England Coasting Pilot from 1729-34. In 1702 he acquired a large lot from Edward Bendall, running from Tremont Row to Ashburton Place, and in about 1720 laid out Southack Court (which became Howard Street in 1821), beginning development in that part of Boston.

Fishing, shipping of lumber and stone, passenger service, and recreational boating all played roles in Boston's maritime history, as did banking, insurance and other trade-related

business, as well as maritime-related crafts and industries, not least of which was ropemaking.

Sandwiched between SPNEA and NPS, the Boston Maritime Museum will occupy about 13,280 ft² on floor 1 of the walk, 17,740 ft² on floor 2 and 8,320 ft² of attic storage space, for a total of 39,340 square feet. Non-storage area will be divided into 20,390 ft² for exhibits, 2,825 ft² for theaters, 2,060 ft² for offices etc., and 5,745 ft² for lobby, circulation, rest rooms.

The variety of exhibits focussing on particular topics will be organized primarily in the centers of the spaces, leaving the rhythmic window pattern relatively free of partitions that might interrupt the vistas. Two theaters will be included on the second level, one for a "Where's Boston"-type slide show on Boston's maritime and development history, and the other a cinema and lecture hall, for films, lectures, recitals and performance art. Since the museum will strive for a high degree of visual quality in its exhibits and presentations, slides and films will be used in the theaters, rather than video.

With all of the space within the Ropewalk and Tar House being required for the three museums' respective programs, those ancillary commercial activities often associated with museums, especially a book and gift shop, and a restaurant or cafe, might be accommodated in the former Power House for the Ropewalk, Building 96.

Leslie Larson
December 30, 1987

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